

ner, or what is commonly call'd, the muscular Coat of the Artery : which terminating here, the Tumour immediately encreas'd to 2 Inches in Diameter, and continued of that Dimension, till it came out at the Neck, between the Clavicles ; but then extended it self circularly to a Diameter of above 3 Inches, the Covering of which was nothing else but the outer Coat of the same Artery all along dilated from the Base, even to the Extremity of the Tumour.

The Cavity was for the most Part fill'd with a Sort of *Polypus*, or *Sarcoma* ; in which nevertheless there were three Sinuses, or Passages, that were kept open by the constant Influx of the Blood, and communicated near the *Apex* with one another ; (that in the Middle being the largest,) and terminating in one towards the Extremity of the Tumour, not far from where it broke.

Such was the State of the Aneurysm in this Subject, what it may be in others, future Enquiries must determine.

V. *Some Observations on Aneurysms in general, and in particular, on the fore-going.* By F. Nicholls, M. B. *Præl. of Anatomy*, Oxon. & F. R. S.

AN Aneurysm is by all Authors defin'd to be a soft circumscrib'd Tumor, in which there is a sensible Pulsation, cotemporary with the Pulsation of the Artery, to which it adheres. As it is certain, that any Tumor of what Kind soever, lying on, or adhering to
any

any considerable Artery, must necessarily be moved by every Pulsation of such Artery, so this Pulsation (unless understood in such Manner as I shall hereafter explain) can no ways be admitted as the true Diagnostick, whereby to specify the Difference between this Kind of Tumor and any other.

An Aneurysm is found most commonly to succeed Falls, Vomitings, Labour-strains, and such other Motions or Indispositions of the Body as, by compressing the great Branches of an Artery, any ways stop the progressive Motion of the Blood.

It is obvious that, as the Section of the Artery above the Compressure must in its natural State be sometimes very incapable of containing at once the whole Quantity of Blood, which ought only to have pass'd thro' it successively; and as the Force of the Heart may frequently exceed the Resistance it may meet with from the Coats of the Artery; so the Consequence of such a Stop to the progressive Motion of the Blood, may occasion either a *Rupture* of the Artery, or a *Distension* of the Artery without a Rupture, or a *Rupture* of the *internal* Coats of the Artery, and a *Distension* of its *external* Coat.

A Rupture of the large Branches of the *Aorta* necessarily allow so plentiful Effusions of the Blood, as to occasion immediate Death; while the Capillaries may be burst without any other Injury, but a slight *Echymosis*, and the Tumor form'd by the Effusion from them will be diffused and superficial.

A Rupture of the mean Branches (such I intend, as descend between the *Tibia* and *Fibula*, the *Radius* and *Ulna*, &c.) will be attended with a considerable Effusion of Blood; but as the Blood will find a Passage

between the Interstices of the Muscles, it will never form a circumscrib'd Tumor. However, the Effusion being continued *per saltum* thro' the ruptur'd Artery, will give a faint Pullation, and consequently some Resemblance of the Aneurysm; for which Reason it is by some Chirurgeons term'd a Bastard-Aneurysm.

Whether or no an Aneurysm be a Tumor form'd by the *Dilatation* of the Artery, or by a *Rupture* of the *internal* Coats of the Artery, and a *Disension* of the *external*, has for some Time been a Matter of great Dispute; each Party protesting (perhaps too unjustly) against the Possibility of the others Opinion.

As to the Possibility of an Artery's being dilated, it stands supported by Reason and Autopsy. We find the Uterine Arteries constantly increas'd in Thickness and Diameter, in Proportion as the *Uterus* is distended; and many Cases of Palpitations of the Heart have been attended with great Dilatations of the *Aorta*; Instances of which I have seen both in human and brute Subjects.

Such a Dilatation will necessarily follow a constant, or frequent Pressure on any Part of the *Aorta*, provided such Pressure does not entirely stop the progressive Motion of the Blood thro' the *Aorta*.

But on the other Hand, such a Dilatation will always retain somewhat of the Form of the Artery. The Resistance will not be every Way equal, as in the extravasate Tumors; because the quaquaversal Pressure of the Blood will be controll'd by the Pressure on the Artery, and the Resistance from the Coats of the Arteries, so as necessarily to form a Cyliindroid. And the Consequence of such a Dilatation cannot (if

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consider'd abstractedly from its Pressures) be worse (if so bad) than from a varicous Vein.

Again, they who conceive an Aneurysm to be a *Rupture* of *both Coats* of the Artery, oppose their Opinion, who imagine the *internal* Coat to be *ruptured*; and the *external* to be *distended*, by comparing the two Coats in Question, and urging, that, as the internal Coat is so much thicker than the external, it seems impossible the last shou'd be sufficient to resist a Force capable of destroying the first. Were these two Coats *similar* as to their Structure, we might then compute their Strength by their Thickness, and this Argument wou'd be of much greater Force than at present it can be; because the internal Coat being composed of *annular Fasciculi*, whose Sides have but a very weak Cohesion, their Power of resisting will not be measurable by the Strength of those *Annuli*; but by the Force with which they adhere *laterally*. And on the other Hand, the external Coat being composed of Fibres *equally interwoven*, and of a quite different Composition, it may either exert a greater Resistance, or be capable of much greater Dilatations than the internal.

But that *Autopsy* may evince the Truth of this Difference in the Strength of these Coats, it will be found by any one who pleases to try the Experiment, that by blowing into the Pulmonary Artery, the internal Coat will soon burst, and the external form it self into aneurifinous Tumors, (*which Experiment was accordingly try'd before the Society, to their Satisfaction.*)

Upon considering all which, and having, by *Order of the Society*, both privately and publickly examin'd the Aneurysm before us, which I find to be round like other extravasate Tumors, unless when controuled by
any

any notable Pressure, and that the *Sacculus* does not *divide* into *Coats* as the Artery from whence it arises *does*, I am induced to think that this Aneurysm is a Tumor form'd by the Blood's being *forced thro'* the *ligamentous*, or what is called the Muscular-coat, and *distending* the *membranous* or outer one. And because the Impetus of the Blood will, as it were, perpetually press thro' the Aperture into the Tumor, and be again (at least in Part) return'd by the Elasticity of the external Coat; therefore such a Tumor will rather have a *pulsatile* Dilatation, than a *Pulsation*, for its true Diagnostick.

VI. *A Letter to Dr. Halley, Astron. Reg. & F. R. S. relating to a surprising Shoal of Pumice-Stones found floating on the Sea, by Mr. John Dove.*

S I R,

HAVING examined my Journal, I send you herein a particular Account of what I can remember, concerning the *Pumice-stones* we fell in with, in our Voyage to *India* in the *Lyell*, *Charles Small* Commander.

On *Monday the 22^d of March, 1724*, at Noon, being in the Latitude *35° 36'* South, and Longitude *4°, 9'* West, with Variation *3°, 16'*, W. we discovered several *Pumice-stones* on the Sea; but not expecting any such thing